National Technics

TAPE DECK

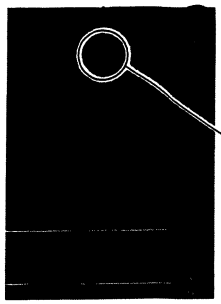
RS-640US

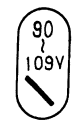
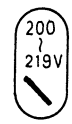
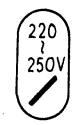
OPERATING INSTRUCTIONS

Before operating this set, please read these instructions completely.

1 VOLTAGE ADJUSTMENT

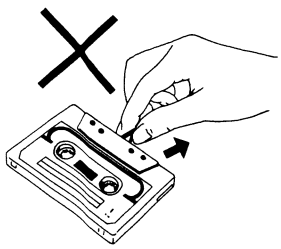
AJUSTE DE VOLTAJE
REGLAGE DU VOLTAGE
電壓之調整
EINSTELLEN DER SPANNUNG

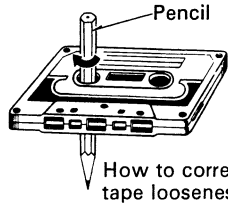


SETTING OF VOLTAGE SELECTOR AJUSTE DEL VOLTAJE REGLAGE DU SELECTEUR DE VOLTAGE 電壓轉換鑿之轉換狀態 EINSTELLUNG DES SPANNUNGSWÄHLERS	 90～109V	110～125V	 200～219V	 220～250V
LOCAL VOLTAGE VOLTAJE LOCAL TENSION LOCALE 當地的電壓狀態 ÖRTL. NETZSPANNUNG	AC 100, 105V 50/60 Hz	AC 110, 115, 117, 120, 125V 50/60 Hz	AC 200, 210V 50/60 Hz	AC 220, 225, 230, 240, 250V 50/60 Hz

2 ABOUT CASSETTE TAPE

CINTAS TIPO "CASSETTE"
LES CASSETTES
卡式(袖珍匣裝式)磁帶簡介
DIE KASSETTE





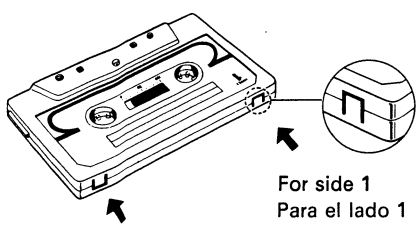
How to correct tape looseness

Use standard cassette

Do not use this type

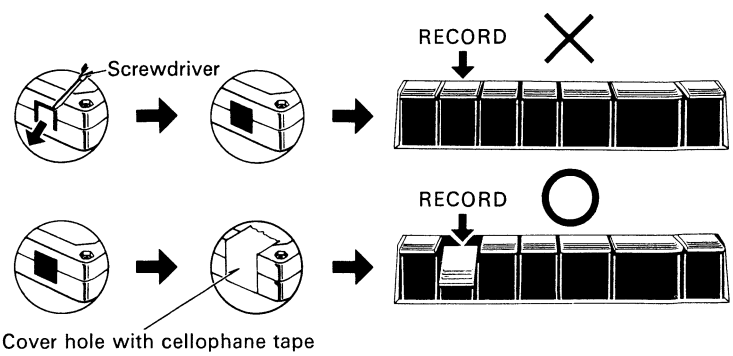
3 ACCIDENTAL ERASE PREVENTION

DISPOSITIVO PARA IMPEDIR QUE SE BORREN LAS CINTAS
DISPOSITIF DE PREVENTION D'ENREGISTREMENT
偶然性抹音之防止
LÖSCHSCHUTZVORRICHTUNG



For side 2
Para el lado 2
Pour le côté 2
第2面用
Für Seite 2

For side 1
Para el lado 1
Pour le côté 1
第1面用
Für Seite 1

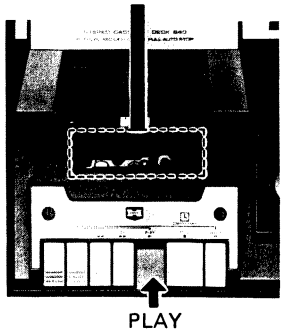


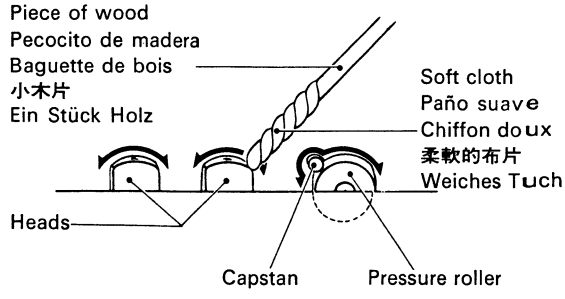
Cover hole with cellophane tape

4 MAINTENANCE

MANTENIMIENTO
ENTRETIEN
日常維修
PFLEGE DES GERÄTES

Head cleaning
Limpiado de las cabezas
Nettoyage des têtes
磁頭之清除
Säubern der Tonköpfe





* DOLBY and "Double D" device are the Trademarks of the Dolby Laboratories Inc.

(ENGLISH)

We want to thank you for selecting the model RS-640US Technics cassette tape deck for your recording and playback enjoyment.
To obtain the maximum benefit of the many features of this deck, please carefully read these operation instructions.

OPERATION NOTES

1. **Use this unit horizontally**
   If, for some reason, this unit must be used at an angle in order to connect to the amplifier or other stereo equipment, be sure the angle does not exceed 30°.
2. **Location**
   Avoid extremely hot (above 100°F. or 35°C.) or extremely cold (below 40°F. or 5°C.) locations or locations in direct sunshine or where subject to excessive vibration, because the performance of the unit may be adversely affected.
3. **Use a power source frequency of either 50 Hz or 60 Hz**
   Because this unit has a DC servo-motor, a power frequency of either 50 Hz or 60 Hz may be used.
4. **Power should be within ±5% of the rated voltage**
   Note that the unit's performance will be uneven, or the unit may be damaged, if the power exceeds ±10% of the rated voltage.
5. **Cleaning of the head assembly**
   One of the most important factors in the determination of good tape recorder performance is regular cleaning of the head assembly. Refer to "MAINTENANCE" on page E-5 and be sure to always keep the head surfaces clean.

VOLTAGE ADJUSTMENT (Refer to fig. 1.)

Before connecting this unit to the AC outlet, make sure that it is properly set to your local voltage. This unit has been set to operate on the voltage indicated on the CAUTION card attached to the unit.
If you use the unit in a different voltage area, readjust it to your local voltage by setting the VOLTAGE selector with a screwdriver.

ABOUT CASSETTE TAPE (Refer to fig. 2.)

The cassette tape used in this unit is the type universal throughout the world.

Notes:

1. Never attempt to pull the tape out of the cassette openings.
2. Never try to turn the reels of the tape cassette by hand because to do so may loosen the tape. If the tape is loose in the cassette, the tape may become wound onto the pressure roller and result in breakage or damage. Tighten looseness of the tape, if necessary, by using a pencil as shown in the figure.
3. Avoid using C-120 cassette tape with this unit because this tape can easily become broken, stretched or twisted if not used with extreme care.
4. Avoid storing this unit in places where the temperature is high and/or where the humidity is high.
5. If the tape is very tightly wound or unevenly wound, fast forward it and then rewind it before use.

ACCIDENTAL ERASE PREVENTION (Refer to fig. 3.)

Tape cassettes have special plastic tabs, one each for side one and side two, which, if removed, prevent accidental erasure of recorded material. These tabs can be pushed out with a screwdriver or similar tool. If they are pushed out, note that, for this unit, the RECORD button cannot be pushed. If, for any reason, it is later desired to make a recording on a cassette from which the tabs have been pushed out, it is possible to do so by simply covering the holes where the tabs were with cellophane tape and recording in the usual way.

CONTROLS (Refer to fig. 5.)

① TAPE COUNTER and reset button
② Cassette compartment cover
③ EJECT button (EJECT)
④ RECORD button (RECORD)
⑤ REWIND button (REW) (◀◀)
⑥ FAST FORWARD button (FF) (▶▶)
⑦ PLAY button (PLAY) (▶)
⑧ STOP button (STOP) (■)
⑨ PAUSE button (PAUSE) (II)
⑩ MICROPHONE LEVEL controls (MIC LEVEL)
⑪ HEADPHONES jack (HEADPHONES)
(stereo headphones-type plug)
⑫ MICROPHONE jacks (MIC L • R) (phone-type plug)
⑬ POWER switch (POWER)
⑭ LINE INPUT LEVEL controls (LINE IN LEVEL)
⑮ OUTPUT LEVEL control (OUTPUT LEVEL)
⑯ DOLBY NOISE-REDUCTION switch (DOLBY NR)
⑰ PEAK-SIGNAL-CHECK switch (PEAK CHECK)
⑱ Recording indication lamp
⑲ Peak level/VU meters
⑳ TAPE selector (TAPE SELECT)
㉑ MEMORY-REWIND switch (MEMORY)
㉒ TAPE END indication lamp (END EYE)
㉓ LINE OUTPUT jacks (LINE OUT)
㉔ RECORD/PLAYBACK connection socket (REC/PB)
㉕ LINE INPUT jacks (LINE IN)

CONNECTIONS (Refer to fig. 6.)

CONNECTION NOTES

This deck is designed for easy connection with a stereo amplifier, a receiver, etc. These connections can be made by referring to the connection diagram and the following instructions:

1. Do not connect both a DIN connection cord and ordinary connection cords to this unit at the same time because to do so will result in abnormal oscillation from the amplifier, and recording and playback will be impossible.
2. Note that a DIN connection cord cannot be used to connect this unit with another tape recorder because a complete circuit is not made.
3. When 2 microphones are used in order to record in stereophonic sound, be sure to use 2 microphones which have the same performance and specification standards.
   When only one microphone is used, connect it to either MICROPHONE jack, and set the MICROPHONE LEVEL control for the channel not being used to the "0" position.

CASSETTE INSERTION AND REMOVAL

1. Push the EJECT button, and insert the tape cassette, with the end where the tape is exposed facing toward you and with the fully-wound reel of tape on the left.
2. To remove the cassette, be sure to first push the STOP button to stop the tape movement, and then push the EJECT button.

FAST FORWARD AND REWIND

Fast forward...Tape is quickly moved forward onto the right reel by pushing the FF button.
Rewind .....By pushing the REW button, the tape is rewound rapidly to the left reel.
Stop .....To stop the rewind or fast forward, push the STOP button.

Caution:

1. Do not push the EJECT button during the fast forward or the rewind operation. Before pushing the EJECT button, be sure to first stop the tape by pushing the STOP button.
2. To change from fast forward or rewind to playback, first push the STOP button. If the PLAY button is pushed during the fast forward or rewinding operation, it will not function.

PLAYBACK

1. For playback of tape recorded by the Dolby noise-reduction system, set the DOLBY NOISE-REDUCTION switch to the "FILTER OUT" position.
2. Set the TAPE selector depending upon the type of tape to be played back.

Type of tape	TAPE selector position
* Fe-Cr	EX
* Chromium-dioxide tape recorded by 70μS system	CrO_2
* Ordinary tape * Low-noise tape * Chromium-dioxide tape recorded by previous system (120μS)	NORMAL

3. After inserting the cassette, push the PLAY button.
4. Adjust the level and the tone quality by using controls on the amplifier.
5. After the playback finishes and the tape has reached its end, the automatic-stop system functions to return the PLAY button to its original position, and the operation is automatically stopped.

Notes:

1. Be sure that tape recorded by the DOLBY noise-reduction system is played back with the DOLBY NOISE-REDUCTION switch set to the "FILTER OUT" position. If the tape is played back with the switch set to the "OUT" position, the treble sounds will be overemphasized and the sound will be unpleasant to the ear.
2. The OUTPUT LEVEL control of this unit can be conveniently used to adjust the level of the signal from this unit to the level of the signal of a record player, tuner, etc. For this reason, this control is, on this unit, designed to affect only the level of the signal from the LINE OUTPUT jacks. There will be no effect, therefore, upon the fluctuations of the meters nor upon the level of the signal from headphones.

RECORDING

1. To make a recording of an FM broadcast by using the Dolby noise-reduction system, set the Dolby NOISE-REDUCTION switch to the center position ("FILTER IN"). To make a recording of any other sound source by using the Dolby noise-reduction system, set this switch to the "FILTER OUT" position. To make a recording by not using the Dolby noise-reduction system, set this switch to the "OUT" position.
2. Connect the equipment to be used for the recording, such as a microphone or stereo amplifier. (Refer to "CONNECTION NOTES" on page E-1.)
3. Set the TAPE selector to the correct position, depending on the type of tape on which the recording is to be made. (Refer to fig. 8.)

Type of tape	TAPE selector position
* Fe-Cr	EX
* Chromium-dioxide tape	CrO_2
* Ordinary tape * Low-noise high-output tape	NORMAL

4. Insert the cassette.

   Note:

   Be sure to use a cassette which has the two plastic tabs intact. If these tabs have been broken out, the RECORD button cannot be pushed and no recording can be made.
   (Refer to "ACCIDENTAL ERASE PREVENTION" on page E-1.)
5. When the RECORD button is pressed, the unit is in the recording mode.
6. The recording level can then be adjusted to the correct level by introducing sound similar to that to be recorded.
   Adjust the recording level by turning the MICROPHONE LEVEL or LINE INPUT LEVEL controls so that the indication needles of the peak level/VU meters move only within the range indicated by the arrows, even at maximum sound input.
7. If the PEAK-SIGNAL-CHECK switch is set to the "IN" position refer to the section "ABOUT THE PEAK-SIGNAL-CHECK SWITCH."
8. After all adjustments are finished, push the PLAY button while depressing the RECORD button. The tape will begin moving and the recording will be made.
9. When the recording is finished and the tape reaches its end, the automatic-stop system will function to automatically stop the operation.

"MIX" RECORDING

"Mix" recordings of:

1. sound from the LINE INPUT jacks and from microphones or
2. sound from the LINE INPUT jacks and from the amplifier (connected to the RECORDING/PLAYBACK connection socket of this unit) can be made with this unit.

■ How to make "mix" recordings

1. In order to make a well-balanced "mix" recording, use headphones to listen to the sound, and adjust the LINE INPUT LEVEL control and the MICROPHONE LEVEL controls as necessary.
2. When a "mix" recording is not being made, set those controls which are not being used to their minimum ("0") position.

ABOUT THE PEAK-SIGNAL-CHECK SWITCH (Refer to fig. 7.)

■ Adjustment of the recording level

To adjust the recording level on ordinary tape decks, the level is adjusted so that the indication needles of the level meters fluctuate at a point as near to (but below) the "0" point as possible. Because this unit has a PEAK-SIGNAL-CHECK switch, however, the adjustment of the recording level can be made as described below for best results.

1. **Adjustment of the recording level by using the PEAK-SIGNAL-CHECK switch**
   - ① Set the PEAK-SIGNAL-CHECK switch to the "OUT" position, and adjust so that the indication needles do not fluctuate beyond the "0 dB" point.
   - ② Next, set the PEAK-SIGNAL-CHECK switch to the "IN" position. Then, at a time when the music is pulsating and such rhythm is reaching its peak, set the MICROPHONE LEVEL controls or LINE INPUT LEVEL controls to a position which will restrain the needles from moving beyond the "+6 dB" point (referring to the "PEAK IN" portion of the meters). By so doing, the recording can be made without distortion.
   - ③ Occasionally, set the PEAK-SIGNAL-CHECK switch to the "OUT" position and confirm that the needles do not move beyond the "0 dB" point of the upper part of the meters.

2. **Difference of indication needle movement caused by setting the PEAK-SIGNAL-CHECK switch to the "IN" and "OUT" positions**
   Because the response to sound signals by indication needles of ordinary level meters is slow, the actual level of momentary signals is not accurately indicated by such meters. This means, of course, that there is always the possibility that recordings may be distorted by large signals which are momentary. The peak level/VU meters of this unit include a special PEAK-SIGNAL-CHECK switch which, when set to the "IN" position, results in the indication by the meters of the level of sounds, even momentary sounds, with extremely precise accuracy.
   The peak level/VU meters of this unit each have dual scale indications which should be read in the following way:
   With the PEAK-SIGNAL-CHECK switch set to the "IN" position, the scale is read up to the +6 dB mark on the lower part of the meters.
   With the PEAK-SIGNAL-CHECK switch set to the "OUT" position, the scale is read up to the +3 dB mark on the upper part of the meters.

   The needle fluctuation for momentary sound and for continuous sound is shown in figure 7.

MONITORING

"Monitoring" means to listen, using headphones, to the sound being recorded at the same time it is being recorded. This is very convenient for actual aural confirmation of the material being recorded.
To monitor, connect stereo headphones (8Ω) to the HEADPHONES jack (HEADPHONES).

Note:

In the same way as for playback, an amplifier can also be used for monitoring. Note, however, if the recording is being made via a connection made to the RECORDING/PLAYBACK connection socket, that monitoring can be done only with headphones.

HOW TO USE THE PAUSE BUTTON

The PAUSE button is used for instantaneous temporary stops and starts of tape movement during recording or playback. When this button is pushed to the depressed position, it remains in that position (and the tape stops) until it is pushed once again (and the tape resumes movement).
The PAUSE button of this unit has, in addition, one more special function which is necessary for a recording or playback made in conjunction with a timer connected to this unit.
Thus, by pushing the PAUSE button while the power to this unit is off, and preparing the unit for recording or playback, the PAUSE button will be automatically released and the tape will begin to move when power to the unit is resumed (as controlled by the timer).

RECORDING WITH A TIMER (Refer to fig. 9.)

(Timer recording of FM broadcasts)

1. Connections
   Connect the power source. (Refer to figure 9.)
   Connect the sound source. (Refer to figure 6.)
2. Insert a blank tape cassette into this unit, and then push the power switch to turn on the power.
3. Tune to the FM broadcasting station from which the broadcast will be later made, and, with the PAUSE button of this unit depressed, then push the RECORD button and the PLAY button and make adjustment of the recording level.
4. Set the timer to the time at which the recording should begin. If the timer's power was on, it will now turn off (although the operation of the timer itself will, of course, begin).

These steps complete the preparations necessary for recording by a timer. When the timer reaches the time to which is was set, power will pass through the timer to this unit, thus releasing the PAUSE button, and the recording of the FM broadcast will begin.

Notes:

1. When the tape reaches its end, the automatic-stop system will function and the operation controls will return to their original positions. If, however, the timer used is the type which can be set to turn off the power, and it is set to turn off the power before the tape reaches its end, the mechanism of this unit will not be released when the power is turned off, and it is possible that the pressure roller may in that way become deformed. It is for this reason recommended, if such a timer is used, that the tape be allowed to move until it reaches its end and thereby causing the automatic-stop system to function before the power is turned off by the timer.
2. To stop the tape movement, if desired, during the recording, simply push the STOP button of this unit.

PLAYBACK WITH A TIMER

1. Insert the already-recorded tape cassette into this unit and make connections to the power source and for playback.
2. Make a trial playback and adjust, if necessary, the volume and tone quality (by using controls on the amplifier to which this unit is connected) to the level desired when the timer playback begins.
3. Rewind the tape to the point from which the timer playback is to begin, push the PAUSE button, and then push the PLAY button.
4. Set the timer to the desired time for beginning of the playback. (Depending on the type of timer used, the power to the timer will be turned off automatically—if it was on—although the operation of the timer itself will, of course, begin.)

These steps complete the preparations necessary for playback by a timer. When the timer reaches the time to which it was set, the playback will begin.

CHROMIUM DIOXIDE TAPE

■ The TAPE selector

In order to assure the best performance when using chromium-dioxde tape:

1. Playback equalization,
2. Recording equalization and
3. Recording bias

can all be changed at the same time by using the tape selector. As a result, chromium dioxide tape can be used to obtain clear tone quality, with very little noise, and a wide dynamic range. Furthermore, although a time constant of 120μS has previously been used in tape recorders designed for use with chromium-dioxide tape, this unit uses a time constant of 70μS in order to obtain much better performance from chromium-dioxide tape.

> The characteristics of this unit are adjusted for optimum use with the following tape:
> For the "NORMAL" position of the TAPE selector, standard cassette tape (QP-12R), which corresponds to type C-90 (RT-90); and, for the "CrO_2" position of the TAPE selector, Technics chromium-dioxide tape (RT-60C).

THE TAPE-END INDICATION LAMP

When, during recording or playback, there is only a small amount of tape remaining, the TAPE-END indication lamp will flash on and off.

Tape type	Time remaining on tape
C-60, C-45, C-30	About 3 minutes
C-90	About 4 minutes

Notes:

1. The time at which this flashing will begin may vary depending upon the type of tape and the manufacturer.
2. When some tape cassettes which have a large hub (such as, for example, TDK SA-C45) are used, the TAPE-END indication lamp may not flash, or may begin to flash only when there is a very small amount of time remaining on the tape.

DOLBY RECORDING HINTS

This unit includes the Dolby noise-reduction system, which reduces tape noise to a remarkable degree.

To briefly describe the way the Dolby system operates, at low signal levels (where tape noise is most noticeable), it increases the level of the high-frequency portion of the sound and then records the sound. Then, during playback, by reducing the level of only that portion which was increased at the time of recording, the tape noise can be reduced by that same amount.

- If Dolby recordings are made under conditions in which the recording sensitivity varies, or in which the frequency response is not flat, the Dolby system cannot function with sufficient efficiency. When, for example, recording sensitivity is high, the treble range will be overemphasized. And, if frequency response is poor, it will become even further deteriorated. It is important, therefore, that the selection of the setting of the TAPE selector, and the choice of the tape to be used, be made with deliberate care.
- If, when a tape is recorded by the Dolby system, a memorandum is written on the cassette, accidental playback in the ordinary (non-Dolby) way can be avoided.

MEMORY REWIND

The Memory Rewind system can be used to conveniently return the tape automatically, during rewind, to any desired position.

Convenient uses of the Memory Rewind system

1. To return to the beginning of a recording and play it back immediately after making the recording.
2. To repeatedly begin playback many times from the same position.

How to use the Memory Rewind system

1. When, during recording or playback, the tape reaches the point to which it should later be returned, push the TAPE COUNTER RESET button to reset it to 000.
2. At the same time, set the MEMORY-REWIND switch to the "ON" position.
3. When the playback or recording is finished, stop the tape movement by pushing the STOP button.
4. Then, by simply pressing the REW button, the tape will be automatically rewound to a position slightly prior to the 000 position of the tape counter.

Notes:

1. Tape movement will stop immediately as soon as the TAPE counter shows any number from 900 to 999 during rewind if the MEMORY-REWIND switch is on. Be sure that the MEMORY-REWIND switch is off at all times unless it is being used for memory rewinding of the tape.
2. After the tape has been rewound to the position desired, as described previously, rewind can be continued further, if desired, by pushing the REW button once more.
3. Tape movement will stop if the MEMORY-REWIND switch is moved from the "OFF" position to the "ON" position during rewinding of the tape and the TAPE counter shows any number from 900 to 999.
4. If the PAUSE button is pushed during the Memory Rewind operation (or was already pushed before the Memory Rewind operation began), the PAUSE button will be automatically released when the TAPE counter reaches 999, the tape will not stop at the previously selected part of the tape, and will continue rewinding until its end is reached, at which time the automatic-stop system will function.

AUTOMATIC-STOP SYSTEM

This unit has an automatic-stop system which, when the tape comes to its end during recording, playback, fast forward or rewind, releases the tape-transport mechanism automatically and places the unit in the stop mode. The advantages of this automatic-stop system are:

* Because the mechanism automatically stops when the tape comes to its end, both the operating parts and the tape itself are protected. (This unit is free from problems such as pressure roller deformation resulting from leaving the unit in the stop condition—without pushing the STOP button—for a long period of time.)

FOUR-TRACK, TWO-CHANNEL RECORDING SYSTEM

The recording is always made on the lower half of the tape width. Two-way recordings can be made in the following way. Tracks 1 and 2 are recorded first, and, when the tape reaches its end, turn the cassette over and re-insert it. Record in the same manner as before. The other two tracks will then be recorded.

(Although this cassette stereo tape deck has the 4-tracks system, tracks 1 and 2, or tracks 3 and 4, cannot be separately recorded.)

ERASING

When recording, any previously-recorded material on the tape is erased automatically. To erase an existing recording without making a new one, disconnect the microphones or other input connection cords, set the MICROPHONE LEVEL controls and the LINE INPUT LEVEL controls to minimum, and operate the unit in the same way as for recording. All previous recordings are completely erased as the cassette runs from beginning to end on each side.

MAINTENANCE (Refer to fig. 4.)

The head assembly, the capstan and the pressure roller are always in contact with the tape during operation. Therefore, they tend to get dirty very easily and have an adverse influence upon the sound quality and the level. Dirt can cause sound loss, noise and deterioration of the frequency characteristics. Therefore it is occasionally necessary to clean these parts as follows.

■ Remove the cassette and wipe the capstan and the pressure roller with a soft cloth. When the PLAY button is pushed, the head assembly becomes accessible. Clean the head assembly. If the dirt is excessive, wind a small piece of soft cloth around the piece of wood and apply a slight amount of alcohol to it.

Notes:

1. Don't allow magnetic materials, such as a screwdriver or a magnet, near the head assembly.
2. When cleaning, be careful not to bend the tape guides.
3. Don't attempt to clean the cabinet with alcohol, benzine or thinner, because it may damage the finish. If the cabinet is dirty, clean with a soft cloth dampened with a soap-and-water-solution.

TROUBLESHOOTING

If operation of this unit does not seem normal, check the following points before requesting service. If the trouble cannot in this way be determined and corrected, contact the dealer from whom it was purchased.

1. **After the tape cassette is inserted, the tape does not move when the PLAY button is pushed.**
   - Is the power cord correctly connected?
   - Is the POWER switch pushed in to the "ON" position?
   - Is the PAUSE button released?
2. **Although the tape moves, no sound is heard.**
   - Is the tape blank?
   - Are the connections of amplifier and speakers correct?
   - Are connection cords from this unit to the amplifier correctly connected?
   - Is the level control of the connected amplifier set to the correct position?
   - Is the monitor switch of the connected amplifier set to the correct position?
   - Is the OUTPUT LEVEL control set to the correct position?
3. **Sound is distorted.**
   - Is the recording level too high?
   - Is the playback output level too high?
   - Is the input impedance of the connected amplifier appropriate?
4. **The RECORD button cannot be pushed down.**
   - Is the tape cassette inserted correctly?
   - Have the recording-prevention tabs of the cassette been removed?
5. **Playback sound is hoarse or vibrates. Recorded sound is not clear.**
   - Are the head surfaces dirty?
   - Is foreign material adhered to the pressure roller and/or the capstan?

MEMO

SPECIFICATIONS

Track System:	4-track 2-channel stereo recording and playback
Tape Speed:	4.8 cm/s, (1⅞ ips)
Wow and Flutter:	0.07% (WRMS), ±0.15% (DIN)
Frequency Response:	CrO2 tape; 20—16,000 Hz 30—13,500 Hz ±3 dB 30—14,500 Hz (DIN) Normal tape; 20—15,000 Hz 30—12,500 Hz ±3 dB 30—13,500 Hz (DIN)
Signal-to-Noise Ratio:	DOLBY NR in; 61 dB (above 5 kHz) DOLBY NR out; 51 dB (signal level=250nWb/m)
Fast Forward and Rewind Time:	Approx. 130 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 0.3mV/applicable microphone impedance 600Ω—20kΩ LINE; sensitivity 60mV/input impedance 68 kΩ
Outputs:	LINE; output level 0.42V/load impedance 50kΩ over HEADPHONE; output level 65mV/8Ω
Rec/PB Connection:	5P DIN type
Motor:	1-Electronic speed control motor
Heads:	1-HPF head for rec/playback 1-Ferrite head for erasing
Power Requirements:	AC; 90—109/110—125/200—219/220—250V 50/60 Hz (not necessary to change any part)
Power Consumption:	7W
Dimensions:	43.2cm(W)×13.0cm(H)×30.1cm(D) (17"×5⅛×"11⅞")
Weight:	5.8 kg (12¾ lbs.)

The above specifications show the numerical value measured with our standard tapes conforming to the IEC standard.

Specifications are subject to change without notice.

*Manufactured under license from Dolby Laboratories Inc.

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